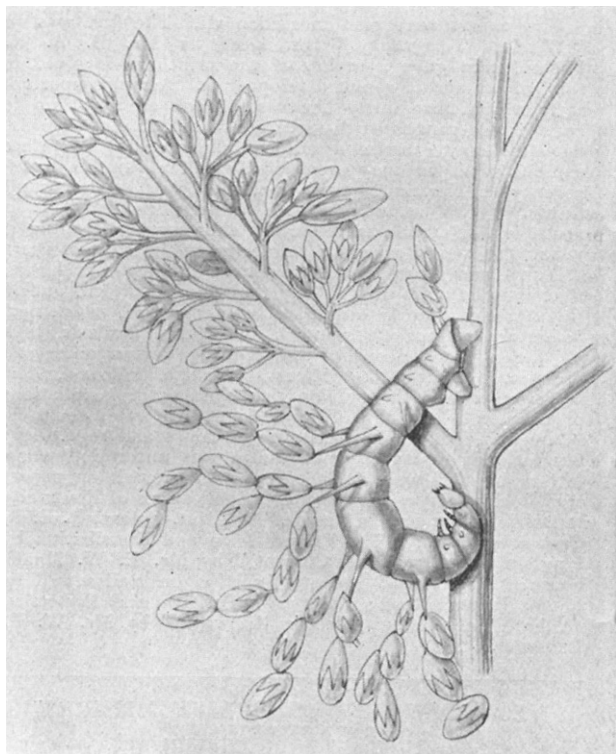


menced." The larva fed on the buds of the inflorescence, scooping out the interior, and (when not hurried) using the empty shells in preference to whole buds for its covering. "When irritated, the larva curled up in the attitude represented in the sketch, and it remained in this position for fifteen or twenty minutes." At other times it would sway about, looking like a branchlet blown by the breeze. The larva spun up on May 28, forming a silk cocoon covered with green buds, but it was, unfortunately, destroyed by ants, and as no other specimen could be discovered, it is



supposed that, as is well known to be frequently the case with specially protected insects, the species must be very rare. The perfect insect is, of course, at present unknown.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The Harkness geological scholarship has been awarded to Mr. R. H. Rastall, Christ's, and the Wiltshire prize in palæontology to A. Blackie, Peterhouse, and H. H. Hodgson, Trinity, equal.

The Museum of Zoology has received an important addition through the bequest of the late Mr. T. E. Buckley, of Trinity College. The collections include some 440 volumes of books, and about 400 birds.

In the natural sciences tripos, part i., thirty men and one woman gain first classes. In part ii. thirteen men and one woman appear in the first class.

The Raymond Horton-Smith prize for the best M.D. thesis of the year is awarded to the Hon. G. H. Scott, Trinity.

At St. John's College the Hockin prize for experimental physics is gained by Mr. J. H. Field, late Lieut. R.E. The Adams memorial prize in astronomy is awarded to Messrs. Gold and Phillips, equal. The Hutchinson studentship for research in botany goes to Mr. R. P. Gregory, University demonstrator.

DR. A. F. DIXON, professor of anatomy in University College, Cardiff, has been appointed to the chair of anatomy

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in Dublin University, lately held by Prof. Daniel Cunningham.

MR. J. STUART THOMSON, lecturer on biology at the Municipal Technical School, Plymouth, has been appointed to the post of assistant to the Government Marine Biologist at the Cape of Good Hope.

DR. K. J. P. ORTON, demonstrator in practical chemistry at St. Bartholomew's Hospital Medical School, has been appointed professor of chemistry at the University College of North Wales, Bangor, in succession to Dr. Dobbie.

THE Massachusetts Institute of Technology has established a laboratory of physical chemistry to be opened in September, which is to be devoted exclusively to research work. The laboratory is to be under the directorship of Prof. A. A. Noyes, with whom will be associated Profs. H. M. Goodwin and Willis R. Whitney. The researches will be carried on in large part by a staff of research assistants and associates working under their direction. Every facility will also be offered to advanced students who wish to carry on investigations in this branch of science.

AN appeal for funds to extend the department of experimental and applied science and natural sciences is being issued by the University of Dublin. It is pointed out that the University of Dublin must either obtain external aid to build and equip laboratories and lecture rooms for physical science, electrical and mechanical engineering, botany and zoology, or teach these subjects under grave disadvantage. A full report, drawn up by a committee appointed by the board of Trinity College to consider the present scientific requirements of the college, shows that a sum of 100,000*l.* is needed to provide for the requirements of the scientific schools of the University. Owing to the generosity of Lord Iveagh, however, the appeal is reduced to a request for an increased income of 2700*l.* The entire capital outlay, 34,000*l.*, is undertaken by Lord Iveagh if the necessary income for upkeep is forthcoming within the next three years.

FOR a long time past the Merchant Venturers' Technical College, Bristol, though a large building, has been inadequate to meet the demands of the increasingly large number of adult day and evening students. Negotiations have, however, just been concluded by which an additional building will become available for the purposes of the college in September next. It is hoped to make provision in this new building for an extensive boot and shoe shop, and for new shops for printers, painters, bookbinders, and plumbers. In order that the new workshops may be fitted up with the latest improvements, the teachers of the college are to visit workshops of the same kinds in other towns. It is hoped also that the local manufacturers interested in the trades in question will be willing to contribute funds or apparatus. The total floor space in the new building will be close upon 12,000 square feet. The space available for the mechanical and the electrical engineering laboratories will be more than doubled. The present small hydraulic laboratory will be replaced by one many times larger, and a new large physical laboratory will be provided. Arrangements are being made to provide as early as the manufacturers can make them a large experimental steam engine, with two additional dynamos and all necessary measuring apparatus, at a cost of about 2000*l.*

THREE months ago, on March 26 (vol. lxxvii. p. 500), a note was given of the gifts to science and higher education announced in *Science* for the preceding quarter. Since then the following benefactions have been published in our contemporary:—Harvard University has received two anonymous gifts, respectively 2000*l.* and 10,000*l.*, for Emerson Hall, to be erected for the department of philosophy, for which the necessary 30,000*l.* required has now been obtained; a fund of 2100*l.* has been subscribed to establish a lectureship in memory of Edwin L. Godkin; 2000*l.* for the establishment of a scholarship and 1000*l.* for the Semitic Museum by the will of Jacob A. Hecht; Mrs. John Markoe has given 1000*l.* to establish a scholarship in memory of her son; and the Harvard Club of Chicago has given 1000*l.* to found a scholarship in memory of Dunlop Smith. Mrs. Anderson has given 200,000*l.* to Barnard

College, Columbia University, to purchase the three blocks of land adjoining Columbia College. Mr. Joseph Pullitzer has given 3000*l.* for scholarships to the university. From the will of Dr. Thomas W. Evans, the City of Philadelphia will receive about 800,000*l.* for the "Thomas W. Evans Museum and Institute Society." Mr. John D. Rockefeller has offered to duplicate money raised by Acadia College, in Wolfville, N. S., up to 20,000*l.* before January 1, 1908; he has also offered to pay two-thirds of the cost of a building for the University of Nebraska to be used for social and religious purposes, on condition that the remaining third of the 20,000*l.* be contributed within about a year, and to give Denison College, Newark, Ohio, 12,000*l.* if the institution will raise a like sum by January 1, 1904, for the construction of additional buildings. Chicago Yale alumni give 500*l.* a year for the establishment of four Yale scholarships. Dr. Elizabeth L. McMahon left 1600*l.* to found a scholarship in Vassar College for daughters of deceased physicians. Colby University, Maine, receives 1000*l.* by the will of the late Robert O. Fuller, of Cambridge, Mass. The will of Mrs. Susan Bevier gives 10,000*l.* to the Rochester Athenæum and Mechanics' Institute. Mrs. Helen F. Ackley has left to Wesleyan University a bequest of 400*l.*, the income from which is to be used for the benefit of one or more women students. Mr. Andrew Carnegie has given 50,000*l.* for an extension of the Mechanics and Tradesmen's Institute, New York City. Dr. D. K. Pearsons has given Winter Park, Florida, 10,000*l.*, and Kingfisher College, Oklahoma, 5000*l.* The late Ario Wentworth, of Salem, Mass., left 20,000*l.* to the Massachusetts Institute of Technology. Mrs. Vail, wife of Prof. Vail, has given Hobart College 1000*l.* The late Walter D. Pitkins has bequeathed 2000*l.* to Yale University. Mr. Francis L. Stetson, of New York, has given 5000*l.* to Williams College. Mr. Robert C. Billings has given the same sum to Wellesley College. Mr. Henry Denhart, of Washington, Ill., announces a further gift of 29,000*l.* to Carthage College. He offers 20,000*l.* for the endowment fund providing that the same amount be raised in the college territory, half of the expense of any new buildings erected up to 10,000*l.*, and 5000*l.* cash.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 28.—"On the Adaptation of the Pancreas to different Foodstuffs." Preliminary Communication. By F. A. Bainbridge, M.B., M.R.C.P. Communicated by Prof. E. H. Starling, F.R.S.

The author's observations have been made in the hope of determining, first, whether the composition of pancreatic juice (as regards its enzymes) varies in response to the stimulus of different foodstuffs, and, secondly, by what means this adaptation is carried out. The enzyme studied was lactase, which converts lactose into galactose and dextrose, and the degree of inversion produced by the enzyme was estimated by Pavy's method.

It was found that when dogs were fed on milk for two or three weeks, their pancreatic juice contained lactase, whereas the pancreatic juice of adult dogs not fed on milk contained no lactase. It seemed clear, therefore, that a definite foodstuff—lactose—caused the pancreas to secrete an enzyme capable of producing (in the lactose) digestive changes; in fact, the pancreatic juice varied in composition with different diets. It is believed by Pawloff and others that this adaptation is carried out entirely by a nervous mechanism, and that a given food reflexly excites the pancreas to secrete a juice specially adapted for the digestion of that particular foodstuff, and Weinland has adopted this view as regards the lactase of the pancreas.

However, Weinland's observation that lactose injected subcutaneously did not cause the formation of lactase by the pancreas suggested to the author that the intestinal mucous membrane must be concerned in the production of lactase, and that possibly the process was chemical rather than nervous. The author found that when an extract of the intestinal mucous membrane of a dog fed on milk was injected into a second biscuit-fed dog, the pancreatic juice of the latter contained lactase. On the other hand, when a watery extract of the intestinal mucous membrane of a biscuit-fed dog was injected intravenously into a second biscuit-fed

dog, the pancreatic juice of the latter contained no lactase. These results suggest that, in consequence of the action of the intestinal mucous membrane on lactose, some substance is formed which passes by the blood-stream to the pancreas, where it stimulates the latter to manufacture a specific enzyme-lactase. If this proves to be the case, the whole process of adaptation must be chemical rather than nervous.

"Hydrolysis of Fats *in vitro* by means of Steapsin." By Dr. J. Lewkowitsch and Dr. J. J. R. Macleod.

Experiments which one of the authors (J. L.) had made with lipase prepared from pig's liver had not led to a higher hydrolysis of cotton-seed oil than 3 per cent. A fresh series of experiments was, therefore, commenced jointly by the authors with steapsin. Preparations of steapsin were obtained by mincing 200 grams of fresh pig's pancreas and triturating it in a mortar with twice the bulk of water. The preparations were not incubated at the body temperature, as previous experiments had proved that steatolytically active preparations had lost considerably in steatolytic power by being kept at 37° C.

The experiments were carried out by triturating in a mortar varying quantities of the steapsin preparations with cotton-seed oil until an emulsion was obtained. Unless the preparation and the oil form a thorough emulsion, no action of the ferment can be expected. If the emulsions are allowed to stand, hydrolysis commences after a few days, and reaches in the course of a few weeks a very considerable amount. Hydrolysis up to 86 per cent. was obtained after a lapse of a few months in the case of cotton-seed oil. Lard has not given so high a percentage of hydrolysis, although the opposite result would have been expected, inasmuch as the consistency of lard favours the state of emulsion.

Steapsin does not seem to produce the reversible action which other enzymes have been shown to exert. So far, small quantities of acid or alkali do not appear to influence the action of the ferment.

The foregoing experiments prove for the first time that it can be demonstrated by the usual quantitative methods of fat analysis that steapsin is a very powerful fat-splitting ferment.

June 11.—"The Measurement of Tissue Fluid in Man." Preliminary Note. By George Oliver, M.D., F.R.C.P. Communicated by Sir Lauder Brunton, F.R.S.

The object of this preliminary note is to indicate a method by which the tissue fluid in man may be measured, thus enabling the observer to ascertain the conditions under which it is effused and disposed of.

In the course of some observations made with the view of eliminating tissue fluid as a cause of variability in the samples of blood obtained for examination, the author found that the rolling of a tight rubber ring over the finger from the tip to beyond the interphalangeal joints will, as a rule, considerably raise the percentages of the blood corpuscles and of the hæmoglobin. The author could not arrive at any other conclusion than that the ring not merely empties the vessels, but likewise clears away any tissue fluid present in the skin and subcutaneous tissues. The needle, in puncturing the capillaries, liberates a certain portion of lymph from the areolar tissue which surrounds them, and this dilutes the blood. When, however, both fluids have been dispersed as much as possible by the compression of the firm rubber ring, a puncture made just before removing the ring yields blood *per se*; for the blood instantly returns to the vessels, whereas an appreciable interval must elapse before the lymph reappears, or is exuded afresh. The author therefore inferred that the reading of the difference in the percentage of the corpuscles, or of the hæmoglobin, before and after the use of the ring, provides a measure of the tissue-lymph, and makes the study of the circulation of it in man possible.

This simple method having furnished somewhat unexpected results, the author accepted them at first with reserve; and, for some time, the data were allowed to accumulate, until at last it was quite apparent that they invariably fell into the same order. Inasmuch as the method did not provide results which were exceptional or erratic, or contradictory and unaccountable, trust on it became gradually established by the mere repetition of the observations.